PHASE 1A SITE INSPECTION PRIORITIZATION REPORT AND PA SCORE PACKAGE

ZENECA, INC. (FORMERLY ICI AMERICAS, INC.)
NORTH LITTLE ROCK, ARKANSAS
ARD006354484

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 6
1445 Ross Avenue
Dallas, TX 75202

Work Assignment	:	C06072
EPA Region	:	6
Site No.	:	ARD006354484
Date Prepared	:	September 26, 1994
Contract No.	:	68-W9-0006
PRC No.	:	009-C06072
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1.0 INTRODUCTION

Under Technical Enforcement Support contract no. 68-W9-0006 (TES 9), work assignment no. C06072, PRC Environmental Management, Inc. (PRC), has completed a Phase IA site inspection prioritization (SIP) on ZENECA, Inc. (ARD006354484). This report summarizes the results of the file review and Preliminary Assessment (PA) Score package, which is based solely on information provided by the U.S. Environmental Protection Agency (EPA).

SIPs are a part of EPA's site assessment process. EPA is tasked with assessing the relative risk that each hazardous waste site poses to human health and the environment. The first step in this process is a PA of the site. Next, if needed, is a site inspection (SI). Through the SIP process, EPA generally reviews sites that have undergone an SI but have not received a decision regarding the need for further action. By using the revised Hazard Ranking System (HRS), EPA uses the results of the SIP to assess whether information obtained during the SI is sufficient to evaluate the site. An SIP also enables EPA to determine whether a site is likely to receive a score of 28.5 or above on the revised HRS, which is the minimum score required for a site to be eligible for placement on the National Priorities List (NPL). To be eligible for Superfund-financed remedial action, a site must be on the NPL. If the site is unlikely to become a candidate for the NPL, it receives a decision of no further remedial action planned, and the site's evaluation under the Comprehensive Environmental Response, Compensation, and Liability Act is complete.

2.0 SITE DESCRIPTION

ZENECA Ag Products owns and operates an agricultural chemical plant at 824 East 12th Street, North Little Rock, Pulaski County, Arkansas (34°45'58" north latitude, 92°15'17" west longitude). Before 1993, the facility operated as ICI Americas, Inc. (ICI). The agricultural chemical plant began operation in 1953 as Stauffer Agricultural Chemical Plant. ICI purchased the plant in 1988. On January 1, 1993, ICI was divided into two separate corporate organizations. ICI's bioscience businesses, including the agricultural plant in North Little Rock, were renamed ZENECA, Inc. At the North Little Rock facility, ZENECA mixes and formulates liquid and granular herbicides for agricultural purposes. Waste streams generated by the manufacturing of agricultural chemicals include ignitable characteristic wastes (D001) and spent laboratory solvents (F003 and F005). The facility occupies 7 acres in an industrial and residential area. A chain-link fence surrounds the entire facility, limiting public access to the property (Ref. 1).

Two underground storage tanks are used for solvent storage, and aboveground storage tanks are used for product storage. In 1972, Stauffer used an 80-by-160-foot burial area to dispose of sevin dust (also known as carbaryl, or 1-naphthyl n-methylcarbamate). During transportation to the site, about 800 50-pound bags of sevin dust in an enclosed truck caught on fire. The facility cooled the chemicals in the truck and placed the smoldering chemicals in the pit. The area was later capped with donofil, which is a fill material that contains fine granite particles. In 1974, a warehouse with a concrete floor was built over the burial area (Ref. 1).

Currently, all hazardous wastes generated from the manufacturing of agricultural chemicals are transported off site for disposal at a treatment, storage, and disposal facility (Ref. 1).

The following permits have been issued to ZENECA:

- State Air Permit No. 1030-AR-1
- National Pollutant Discharge Elimination System (NPDES) Permit No. AR0042901.

In February 1980, EPA conducted an SI at Stauffer. The SI addressed the burial. EPA recommended no further action, because the area had a concrete cover, which minimized the threat to the environment (Ref. 1).

On December 17, 1990, ADPC&E conducted an inspection pursuant to federal and state water pollution regulations. The inspection revealed several violations pertaining to ICI's NPDES permit (Ref. 1).

On April 16, 1991, ADPC&E issued an Administrative Order on Consent to ICI. The order resulted from ICI's failure to meet the discharge limitations set in its NPDES permit (Ref. 1).

On September 6, 1991, ADPC&E conducted an air inspection at ICI. No violations were noted during the inspection (Ref. 1).

On December 11, 1992, ADPC&E conducted a PA inspection at ICI. ADPC&E concluded that, because of the presence of a shallow aquifer, further sampling was needed to determine the extent of contamination, if any, of all media (Ref. 1).

3.0 PRELIMINARY HRS SCORING

Based on the EPA file information that PRC reviewed, the site received an overall PA score of 8. The groundwater pathway score of 1 did not contribute to the overall score, because (1) groundwater is not used in this area as a source of drinking water, and (2) there are no documented releases to the groundwater. The surface water pathway received a score of 4, because there are (1) no documented releases to surface water, and (2) no primary or secondary target populations. The soil exposure pathway score of 3 did not contribute to the overall site score, because there are (1) no targets within 200 feet of contamination, and (2) there are no documented releases to soil. The air pathway score of 14 drives the overall site score because of the secondary target population within a 4-mile radius of the site.

3.1 WASTE CHARACTERISTICS

A 12,800-square-foot area was used to dispose of Sevin dust—also known as carbaryl, or 1-naphthyl n-methylcarbamate. Sevin dust is used as a commercial and consumer product for application to crops, shade and fruit trees, vegetables, and lawns. The waste characteristic that was calculated resulted in a score of 32. The waste characteristic was based on the area tier for a single source site.

3.2 MIGRATION AND EXPOSURE PATHWAYS

The following subsections summarize the characteristics of each migration or exposure pathway, including (1) the likelihood of a release to each pathway, and (2) the targets associated with each pathway.

3.2.1 Groundwater Migration Pathway

Pulanski County is located in the north-central part of the West Gulf Coastal Plain Physiographic Province. The rocks of the Coastal Plain are of sedimentary origin and are composed of clay, sandstone, marl, chalk, conglomerate, and lignite. These rocks range in age from early Cretaceous to Quaternary. Nine geologic units are exposed in the Coastal Plain of Pulaski County; however, only three units are important sources of water. The other units do not yield adequate water. The depth to groundwater in this area is about 8 feet (Ref. 1).

The predominant soil in this area is the Perry-Urban Complex, which consists of the Perry Series soils. The Perry Series soils are poorly-drained level soils on bottomlands. Soil permeability is very low, and available water capacity is high.

No drinking water wells are located within 4 miles of the site. The City of North Little Rock obtains its drinking water from Lake Maumella and Lake Winona. The surface water intakes are located about 20 miles west of the site (Ref. 1).

In the files that were reviewed, no analytical data were available to document a release to groundwater.

3.2.2 Surface Water Migration Pathway

Overland drainage from the site and the facility's NPDES discharge flow northeast to a drainage ditch that flows to an unnamed tributary of the west branch of Dark Hollow Canal, then to Dark Hollow Canal, then to the Arkansas River. The Arkansas River is designated for primary and secondary contact recreation, perennial fisheries, and agricultural and industrial water supplies. The Arkansas River is not used as a drinking water source in this area (Ref. 1).

No surface water intakes are located within 15 downstream miles of the site. The City of North Little Rock obtains its drinking water from Lake Maumella and Lake Winona, which are located west of the site (Ref. 1).

The bald eagle, interior least tern, and ozark chinquapin—which are federal listed or endangered species—are known to occur within a 15-mile radius of the site. The small-head pipewort, winterberry holly, and the purple fringeless orchid—which are state endangered or threatened plants—are also known to occur within a 15-mile radius of ZENECA. No wetlands are located along the surface water migration pathway (Ref. 1).

3.2.3 Soil Exposure Pathway

The site is inaccessible to the public. The entire site is fenced. Sixty people live within 1/4 mile of the site (Ref. 2). The nearest resident is located about 250 feet north of the site (Ref. 1). The total population within a 4-mile radius of the site is 113,612 (Ref. 2). A warehouse with a concrete floor covers the burial area. Exposure to soil contamination from the burial area is minimal.

3.2.4 Air Migration Pathway

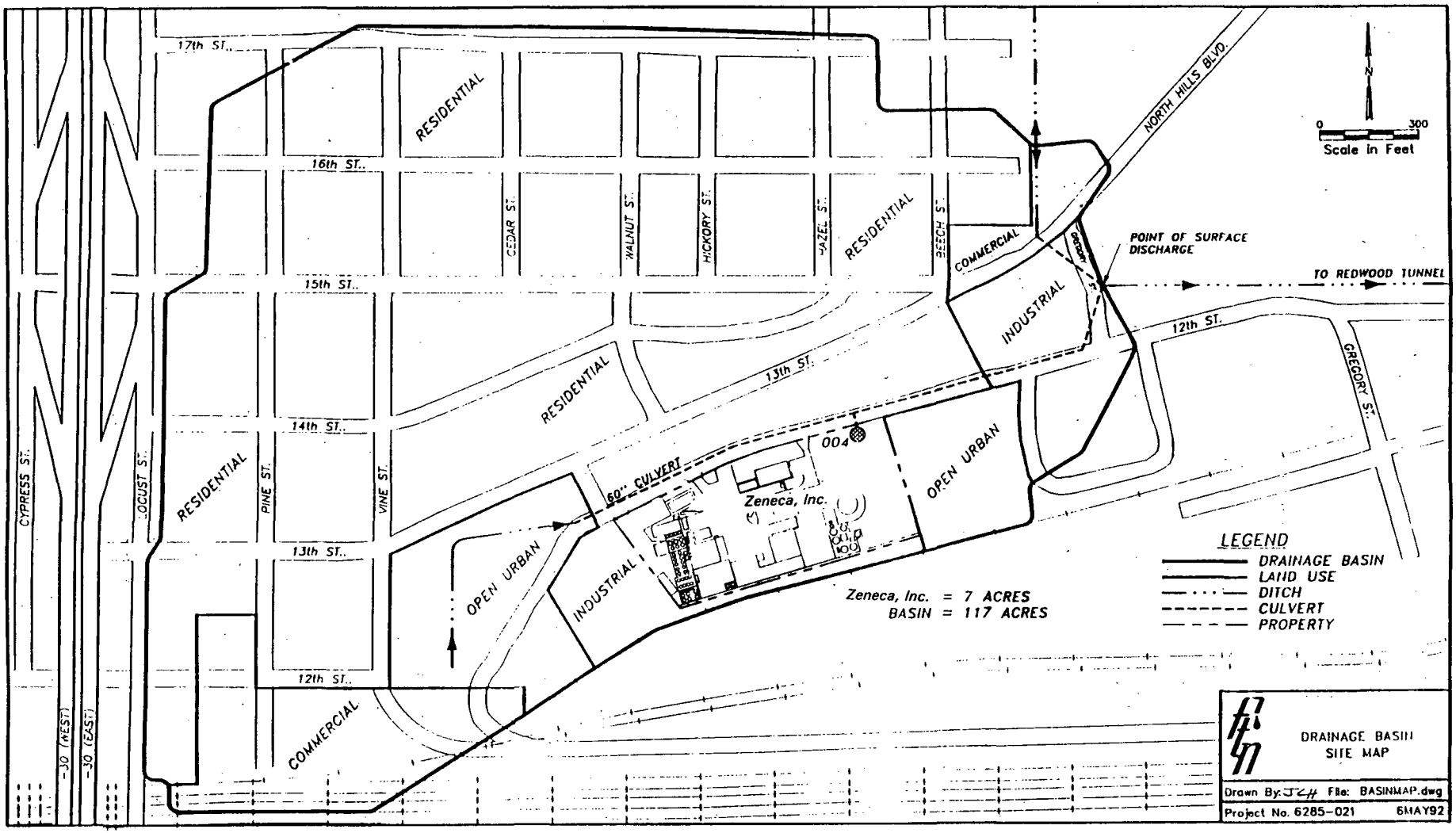
The total population within a 4-mile radius of the facility is 113,612 (Ref. 2). Because the burial area

is covered with concrete, the potential for a release of hazardous constituents from the burial area pit is minimal. However, an airborne release from the burial area could occur if the concrete were removed.

4.0 SUMMARY

ZENECA is located in North Little Rock, Pulaski County, Arkansas. Based on EPA file information reviewed by PRC, the site received an overall PA score of 8. The overall site score is driven by the absence of (1) documented releases to groundwater, surface water, soil, and air pathways, (2) primary or secondary target populations for the groundwater and surface water pathways, and (3) secondary sensitive environments for the air pathway.

APPENDIX A



ZENECA, INC.
NORTH LITTLE ROCK, ARKANSAS
ARD006354484

SITE LOCATION MAP

SOURCE: MODIFIED FROM FTN, INC., DRAINAGE BASIN SITE MAP

PRC Environmental Management, Inc.

APPENDIX B

OMB Approval Number: 2050-0095
Approved for Use Through: 4/95

PA-Score

PA Scoresheets

Site Name: Zeneca (Formerly ICI Americas)
CERCLIS ID No.: ARD983285255
Street Address: 824 East 12th Street
City/State/Zip: North Little Rock, AR 72114

Investigator: Christine Easterling
Agency/Organization: PRC EMI
Street Address: 350 N. St. Paul Street #2600
City/State: Dallas, TX

Date: 9/26/94

OMB Approval Number: 2050-0095
Approved for Use Through: 4/95

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: AR	CERCLIS Number: ARD983285255
	CERCLIS Discovery Date:	

1. General Site Information

Name:		Street Address:			
Zeneca (Formerly ICI Americas)		824 East 12th Street			
City:	State:	Zip Code:	County:	Co. Code:	Cong. Dist:
North Little Rock	AR	72114	Pulaski		
Latitude: Longitude:		Approx. Area of Site:		Status of Site:	
34° 45' 58.0" 92° 15' 17.0"		7 sq feet		Active	

2. Owner/Operator Information

Owner:			Operator:		
Unknown			Zeneca, Inc.		
Street Address:			Street Address:		
			824 East 12th Street		
City:			City:		
			North Little Rock		
State:	Zip Code:	Telephone:	State:	Zip Code:	Telephone:
			AR	72114	
Type of Ownership:			How Initially Identified:		
Private			Not Specified		

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: AR	CERCLIS Number: ARD983285255
	CERCLIS Discovery Date:	

3. Site Evaluator Information			
Name of Evaluator: Christine Easterling	Agency/Organization: PRC EMI		Date Prepared: 9/26/94
Street Address: 350 N. St. Paul Street #2600	City: Dallas		State: TX
Name of EPA or State Agency Contact: John Jones	Telephone: 214-665-6669		
Street Address: 1445 Ross Avenue	City: Dallas		State: TX

4. Site Disposition (for EPA use only)		
Emergency Response/Removal Assessment Recommendation: No Date:	CERCLIS Recommendation: NFRAP Date:	Signature: Name: Position:

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: AR	CERCLIS Number: ARD983285255
	CERCLIS Discovery Date:	

5. General Site Characteristics

Predominant Land Uses Within 1 Mile of Site:	Site Setting:	Years of Operation:
Industrial Commercial Residential	Urban	Beginning Year: 1953 Ending Year: 2000 X Unknown

Type of Site Operations:	Waste Generated:
Manufacturing Agricultural Chemicals RCRA Small Quantity Generator	Onsite
	Waste Deposition Authorized By: Former Owner
	Waste Accessible to the Public: No
	Distance to Nearest Dwelling, School, or Workplace: 250 Feet

6. Waste Characteristics Information

Source Type	Quantity	Tier
Surface impoundment	1.28e+04 sq ft	A

Tier Legend
C = Constituent W = Wastestream
V = Volume A = Area

General Types of Waste:
Pesticides/Herbicides

Physical State of Waste as Deposited
Powder

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: AR	CERCLIS Number: ARD983285255
	CERCLIS Discovery Date:	

7. Ground Water Pathway

Is Ground Water Used for Drinking Water Within 4 Miles: No Type of Ground Water Wells Within 4 Miles: None	Is There a Suspected Release to Ground Water: No Have Primary Target Drinking Water Wells Been Identified: No	List Secondary Target Population Served by Ground Water Withdrawn From:
Depth to Shallowest Aquifer: 8 Feet Karst Terrain/Aquifer Present: No	Nearest Designated Wellhead Protection Area: None within 4 Miles	0 - 1/4 Mile 0 >1/4 - 1/2 Mile 0 >1/2 - 1 Mile 0 >1 - 2 Miles 0 >2 - 3 Miles 0 >3 - 4 Miles 0 Total 0

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: AR	CERCLIS Number: ARD983285255
	CERCLIS Discovery Date:	

8. Surface Water Pathway Part 1 of 4

Type of Surface Water Draining Site and 15 Miles Downstream:	Shortest Overland Distance From Any Source to Surface Water:
River Other: Drainage Ditch	6600 Feet 1.2 Miles
Is there a Suspected Release to Surface Water: No	Site is Located in: >10 yr - 100 yr floodplai

8. Surface Water Pathway Part 2 of 4

Drinking Water Intakes Along the Surface Water Migration Path: No

Have Primary Target Drinking Water Intakes Been Identified: No

Secondary Target Drinking Water Intakes:
None

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: AR	CERCLIS Number: ARD983285255
	CERCLIS Discovery Date:	

8. Surface Water Pathway Part 3 of 4

Fisheries Located Along the Surface Water Migration Path: Yes

Have Primary Target Fisheries Been Identified: No

Secondary Target Fisheries:

Fishery Name	Water Body Type/Flow(cfs)
Arkansas River	large river/ >10000

8. Surface Water Pathway Part 4 of 4

Wetlands Located Along the Surface Water Migration Path? (y/n) No

Have Primary Target Wetlands Been Identified? (y/n) No

Secondary Target Wetlands:
None

Other Sensitive Environments Along the Surface Water Migration Path: Yes

Have Primary Target Sensitive Environments Been Identified: No

Secondary Target Sensitive Environments:

Water Body/Flow(cfs)	Sensitive Environment Type
large river/ >10000	Habitat for Federally designated endanger
large river/ >10000	Habitat for Federally designated endanger
large river/ >10000	Habitat for Federally designated endanger

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT FORM	IDENTIFICATION	
	State: AR	CERCLIS Number: ARD983285255
	CERCLIS Discovery Date:	

9. Soil Exposure Pathway

Are People Occupying Residences or Attending School or Daycare on or Within 200 Feet of Areas of Known or Suspected Contamination: No	Number of Workers Onsite: 1 - 100

Have Terrestrial Sensitive Environments Been Identified on or Within 200 Feet of Areas of Known or Suspected Contamination: No

10. Air Pathway

Total Population on or Within:	
Onsite	31
0 - 1/4 Mile	0
>1/4 - 1/2 Mile	1233
>1/2 - 1 Mile	5138
>1 - 2 Miles	20400
>2 - 3 Miles	41683
>3 - 4 Miles	45158
Total	113643

Is There a Suspected Release to Air: No

Wetlands Located Within 4 Miles of the Site: No

Other Sensitive Environments Located Within 4 Miles of the Site: No

Sensitive Environments Within 1/2 Mile of the Site:
None

WASTE CHARACTERISTICS

Waste Characteristics (WC) Calculations:

1 Burial Area	Surface impoundment	Ref: 1	WQ value	maximum
Area	1.28E+04 sq ft		9.85E+02	9.85E+02

Burial area is 80-feet by 160-feet. 80 x 160 = 12,800 square feet
Ref: 1

** Only First WC Page Is Printed ** | Waste Characteristics Score: WC = 32

Ground Water Pathway Criteria List
Suspected Release

Are sources poorly contained? (y/n/u)	Y
Is the source a type likely to contribute to ground water contamination (e.g., wet lagoon)? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	U
Is precipitation heavy? (y/n/u)	Y
Is the infiltration rate high? (y/n/u)	N
Is the site located in an area of karst terrain? (y/n)	N
Is the subsurface highly permeable or conductive? (y/n/u)	U
Is drinking water drawn from a shallow aquifer? (y/n/u)	N
Are suspected contaminants highly mobile in ground water? (y/n/u)	N
Does analytical or circumstantial evidence suggest ground water contamination? (y/n/u)	N

Other criteria? (y/n) N

SUSPECTED RELEASE? (y/n) N

Summarize the rationale for Suspected Release:

Groundwater is not used as a source of drinking water in this area. There was no analytical data in the files reveiwed to document a release to groundwater from the burial area.

Ref: 1

Ground Water Pathway Criteria List
Primary Targets

Is any drinking water well nearby? (y/n/u)	N
Has any nearby drinking water well been closed? (y/n/u)	N
Has any nearby drinking water well user reported foul-testing or foul-smelling water? (y/n/u)	N
Does any nearby well have a large drawdown/high production rate? (y/n/u)	N
Is any drinking water well located between the site and other wells that are suspected to be exposed to a hazardous substance? (y/n/u)	N
Does analytical or circumstantial evidence suggest contamination at a drinking water well? (y/n/u)	N
Does any drinking water well warrant sampling? (y/n/u)	N

Other criteria? (y/n) N

PRIMARY TARGET(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Targets:

Groundwater is not used as a source for drinking water in this area. The city of North Little Rock obtains its drinking water from surface water.

Ref: 1

GROUND WATER PATHWAY SCORESHEETS

Pathway Characteristics

		Ref.
Do you suspect a release? (y/n)	No	
Is the site located in karst terrain? (y/n)	No	
Depth to aquifer (feet):	8	1
Distance to the nearest drinking water well (feet):	4	

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	0		
2. NO SUSPECTED RELEASE		500	
LR =	0	500	

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 0 person(s)	0		
4. SECONDARY TARGET POPULATION Are any wells part of a blended system? (y/n) N	0	0	
5. NEAREST WELL	0	0	
6. WELLHEAD PROTECTION AREA None within 4 Miles	0	0	
7. RESOURCES	5	0	
T =	5	0	

WASTE CHARACTERISTICS

WC =	32	0

GROUND WATER PATHWAY SCORE: 1

Ground Water Target Populations

Primary Target Population Drinking Water Well ID	Dist. (miles)	Population Served	Reference	Value
None				

*** Note : Maximum of 5 Wells Are Printed *** Total

Secondary Target Population Distance Categories	Population Served	Reference	Value
0 to 1/4 mile	0		0
Greater than 1/4 to 1/2 mile	0		0
Greater than 1/2 to 1 mile	0		0
Greater than 1 to 2 miles	0		0
Greater than 2 to 3 miles	0		0
Greater than 3 to 4 miles	0		0
		Total	0

Apportionment Documentation for a Blended System

Surface Water Pathway Criteria List Suspected Release	
Is surface water nearby? (y/n/u)	Y
Is waste quantity particularly large? (y/n/u)	U
Is the drainage area large? (y/n/u)	Y
Is rainfall heavy? (y/n/u)	Y
Is the infiltration rate low? (y/n/u)	Y
Are sources poorly contained or prone to runoff or flooding? (y/n/u)	N
Is a runoff route well defined(e.g.ditch/channel to surf.water)? (y/n/u)	Y
Is vegetation stressed along the probable runoff path? (y/n/u)	N
Are sediments or water unnaturally discolored? (y/n/u)	U
Is wildlife unnaturally absent? (y/n/u)	U
Has deposition of waste into surface water been observed? (y/n/u)	N
Is ground water discharge to surface water likely? (y/n/u)	U
Does analytical/circumstantial evidence suggest S.W. contam? (y/n/u)	N
Other criteria? (y/n) N	
SUSPECTED RELEASE? (y/n)	N

Summarize the rationale for Suspected Release:

There is no analytical data to document a release of hazardous constituents to surface water.

Surface Water Pathway Criteria List
Primary Targets

Is any target nearby? (y/n/u) If yes: Y
N Drinking water intake
Y Fishery
Y Sensitive environment

Has any intake, fishery, or recreational area been closed? (y/n/u) N

Does analytical or circumstantial evidence suggest surface water contamination at or downstream of a target? (y/n/u) N

Does any target warrant sampling? (y/n/u) If yes: N
N Drinking water intake
N Fishery
N Sensitive environment

Other criteria? (y/n) N

PRIMARY INTAKE(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Intakes:

There are no intakes located 15 downstream miles from the facility.

Ref: 1
continued -------

continued -------

Other criteria? (y/n) N

PRIMARY FISHERY(IES) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Fisheries:

Other criteria? (y/n) N

PRIMARY SENSITIVE ENVIRONMENT(S) IDENTIFIED? (y/n) N

Summarize the rationale for Primary Sensitive Environments:

SURFACE WATER PATHWAY SCORESHEETS

Pathway Characteristics		Ref.
Do you suspect a release? (y/n)	No	
Distance to surface water (feet):	6600	
Flood frequency (years):	100	
What is the downstream distance (miles) to: a. the nearest drinking water intake? b. the nearest fishery? c. the nearest sensitive environment?	 0.0 1.2 14.0	

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	0		
2. NO SUSPECTED RELEASE		400	
LR =	0	400	

Drinking Water Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
3. Determine the water body type, flow (if applicable), and number of people served by each drinking water intake.			
4. PRIMARY TARGET POPULATION 0 person(s)	0		
5. SECONDARY TARGET POPULATION Are any intakes part of a blended system? (y/n): N	0	0	
6. NEAREST INTAKE	0	0	
7. RESOURCES	0	5	
T =	0	5	

Drinking Water Threat Target Populations

Intake Name	Primary (y/n)	Water Body Type/Flow	Population Served	Ref.	Value
None					

Total Primary Target Population Value	0
Total Secondary Target Population Value	0

*** Note : Maximum of 6 Intakes Are Printed ***

Apportionment Documentation for a Blended System

Human Food Chain Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
8. Determine the water body type and flow for each fishery within the target limit.			
9. PRIMARY FISHERIES	0		
10. SECONDARY FISHERIES	0	12	
T =	0	12	

Human Food Chain Threat Targets

Fishery Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
1 Arkansas River	N	>10000 cfs		12
None				

Total Primary Fisheries Value	0
Total Secondary Fisheries Value	0

*** Note : Maximum of 6 Fisheries Are Printed ***

Environmental Threat Targets

TARGETS	Suspected Release	No Suspected Release	References
11. Determine the water body type and flow (if applicable) for each sensitive environment.			
12. PRIMARY SENSITIVE ENVIRONMENTS	0		
13. SECONDARY SENSITIVE ENVIRONS.	0	10	
T =	0	10	

Environmental Threat Targets

Sensitive Environment Name	Primary (y/n)	Water Body Type/Flow	Ref.	Value
1 Bald Eagle	N	>10000 cfs		0
2 Interior Least Tern	N	>10000 cfs		0
3 Ozark Chinquapin	N	>10000 cfs		0
None				

Total Primary Sensitive Environments Value 0
Total Secondary Sensitive Environments Value 0

*** Note: Maximum of 6 Sensitive Environments Are Printed ***

Surface Water Pathway Threat Scores

Threat	Likelihood of Release(LR) Score	Targets(T) Score	Pathway Waste Characteristics (WC) Score	Threat Score LR x T x WC / 82,500
Drinking Water	400	5	32	1
Human Food Chain	400	12	32	2
Environmental	400	10	32	2

SURFACE WATER PATHWAY SCORE: 4

Soil Exposure Pathway Criteria List
Resident Population

Is any residence, school, or daycare facility on or within 200 feet of an area of suspected contamination? (y/n/u)	N
Is any residence, school, or daycare facility located on adjacent land previously owned or leased by the site owner/operator? (y/n/u)	N
Is there a migration route that might spread hazardous substances near residences, schools, or daycare facilities? (y/n/u)	N
Have onsite or adjacent residents or students reported adverse health effects, exclusive of apparent drinking water or air contamination problems? (y/n/u)	N
Does any neighboring property warrant sampling? (y/n/u)	N

Other criteria? (y/n) N

RESIDENT POPULATION IDENTIFIED? (y/n) N

Summarize the rationale for Resident Population:

SOIL EXPOSURE PATHWAY SCORESHEETS

Pathway Characteristics		Ref.
Do any people live on or within 200 ft of areas of suspected contamination? (y/n)	No	
Do any people attend school or daycare on or within 200 ft of areas of suspected contamination? (y/n)	No	
Is the facility active? (y/n):	Yes	

LIKELIHOOD OF EXPOSURE	Suspected Contamination	References
1. SUSPECTED CONTAMINATION LE =	550	

Targets

2. RESIDENT POPULATION 0 resident(s) 0 school/daycare student(s)	0	
3. RESIDENT INDIVIDUAL	0	
4. WORKERS 1 - 100	5	
5. TERRES. SENSITIVE ENVIRONMENTS	0	
6. RESOURCES	5	
T =	10	

WASTE CHARACTERISTICS

WC = 32

RESIDENT POPULATION THREAT SCORE: 2

NEARBY POPULATION THREAT SCORE: 1

Population Within 1 Mile: 1 - 10,000

SOIL EXPOSURE PATHWAY SCORE: 3

Soil Exposure Pathway Terrestrial Sensitive Environments

Terrestrial Sensitive Environment Name	Reference	Value
None		

Total Terrestrial Sensitive Environments Value

*** Note : Maximum of 7 Sensitive Environments Are Printed ***

Air Pathway Criteria List
Suspected Release

Are odors currently reported? (y/n/u)	N
Has release of a hazardous substance to the air been directly observed? (y/n/u)	N
Are there reports of adverse health effects (e.g., headaches, nausea, dizziness) potentially resulting from migration of hazardous substances through the air? (y/n/u)	N
Does analytical/circumstantial evidence suggest release to air? (y/n/u)	N
Other criteria? (y/n) N	
SUSPECTED RELEASE? (y/n)	N

Summarize the rationale for Suspected Release:

AIR PATHWAY SCORESHEETS

Pathway Characteristics

		Ref.
Do you suspect a release? (y/n)	No	
Distance to the nearest individual (feet):	0	

LIKELIHOOD OF RELEASE	Suspected Release	No Suspected Release	References
1. SUSPECTED RELEASE	0		
2. NO SUSPECTED RELEASE		500	
LR =	0	500	

Targets

TARGETS	Suspected Release	No Suspected Release	References
3. PRIMARY TARGET POPULATION 0 person(s)	0		
4. SECONDARY TARGET POPULATION	0	49	
5. NEAREST INDIVIDUAL	0	20	
6. PRIMARY SENSITIVE ENVIRONS.	0		
7. SECONDARY SENSITIVE ENVIRONS.	0	0	
8. RESOURCES	0	5	
T =	0	74	

WASTE CHARACTERISTICS

WC =	0	32

AIR PATHWAY SCORE:	14

Air Pathway Secondary Target Populations

Distance Categories	Population	References	Value
Onsite	31	2	5
Greater than 0 to 1/4 mile	0	2	0
Greater than 1/4 to 1/2 mile	1233	2	9
Greater than 1/2 to 1 mile	5138	2	8
Greater than 1 to 2 miles	20400	2	8
Greater than 2 to 3 miles	41683	2	12
Greater than 3 to 4 miles	45158	2	7
		Total Secondary Population Value	49

Air Pathway Primary Sensitive Environments

Sensitive Environment Name	Reference	Value
None		
Total Primary Sensitive Environments Value		

*** Note : Maximum of 7 Sensitive Environments Are Printed***

Air Pathway Secondary Sensitive Environments

Sensitive Environment Name	Distance	Reference	Value
None			
Total Secondary Sensitive Environments Value			

SITE SCORE CALCULATION	SCORE
GROUND WATER PATHWAY SCORE:	1
SURFACE WATER PATHWAY SCORE:	4
SOIL EXPOSURE PATHWAY SCORE:	3
AIR PATHWAY SCORE:	14
SITE SCORE:	8

SUMMARY

1. Is there a high possibility of a threat to any nearby drinking water well(s) by migration of a hazardous substance in ground water? No

   If yes, identify the well(s).

   If yes, how many people are served by the threatened well(s)? 0

2. Is there a high possibility of a threat to any of the following by hazardous substance migration in surface water?
   A. Drinking water intake No
   B. Fishery No
   C. Sensitive environment (wetland, critical habitat, others) No

   If yes, identity the target(s).

3. Is there a high possibility of an area of surficial contamination within 200 feet of any residence, school, or daycare facility? No

   If yes, identify the properties and estimate the associated population(s)

4. Are there public health concerns at this site that are not addressed by PA scoring considerations? No

   If yes, explain:

APPENDIX C

REFERENCES

1. Arkansas Department of Pollution Control and Ecology. 1992. Preliminary Assessment of ICI Burial Pit. December 17.

2. U.S. Environmental Protection Agency. 1994. Graphical Exposure Modeling System Database, compiled from U.S. Bureau 1980 data. Accessed on August 1.

REFERENCE 1

PRELIMINARY ASSESSMENT
ICI BURIAL PIT
AKA: ICI OF AMERICA, ICI AGRICULTURAL, AND STAUFFER CHEMICAL COMPANY
NORTH LITTLE ROCK, ARKANSAS
(PA-18)

EPA I.D. NO.: AR 983285255

December 17,1992

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

Prepared By

Tammie J. Hynum
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Reviewed & Approved By

Devon Hobby
Branch Manager

Date: December 17, 1992

Prepared by: Tammie J. Hynum, Hazardous Waste Inspector
Arkansas Department of Pollution Control and Ecology
8001 National Drive
Little Rock, Arkansas 72219-8913

Site: ICI Burial Pit
824 East 12th Street
North Little Rock, Arkansas 72115

EPA ID No.: ARD983285255

1. INTRODUCTION

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the Arkansas Department of Pollution Control and Ecology (ADPC&E), Hazardous Waste Division, Superfund Branch, conducted a Preliminary Assessment (PA) at ICI Burial Pit ("ICI"), also known as ICI of America, ICI Agricultural, and Stauffer Chemical Company, in North Little Rock, Arkansas. The purpose of this investigation was to collect information concerning conditions at the ICI Burial Pit site sufficient to assess the threat posed to human health and the environment and to determine the need for additional CERCLA/SARA or other appropriate action. The scope of the investigation included review of available file information, a comprehensive target survey, and an onsite and offsite reconnaissance (December 11, 1992).

2. SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS

2.1 Location

ICI, a agricultural chemical manufacturing plant, is located at 824 East Twelfth Street in North Little Rock, Arkansas (Figure 1). North Little Rock, Arkansas is located in central Pulaski County. Pulaski County is located in central Arkansas and is somewhat triangular in shape (Figure 2). The area of the county is 489,408 acres, or about 765 square miles, including approximately 1,298 acres of water. North Little Rock, Pulaski County, Arkansas is located within the Gulf Coastal Plain and bordered by six (6) Arkansas counties (Reference 1, pp. 1; Figure 2; Figure 3).

The population of Pulaski County is 349,660. North Little Rock, Arkansas has a population of 61,741 (Reference 2, pp. 3, 14). The geographic coordinates of ICI are 34^0 45′ 58" latitude and 92^0 15′ 17" longitude (Reference 3; Reference 4, pp. 1). To reach the site from Little Rock travel Interstate 30 East, take the Broadway Street exit and stay on the access road (Locust Street). After crossing the bridge on Locust Street take a right onto Thirteenth (13th) Street. Proceed on 13th Street and turn right onto Cedar Street. Travel Cedar Street, which is one block long, to Twelfth Street and turn left. ICI is located at 824 East Twelfth Street (Figure 1).

The climate in Pulaski County is characterized by hot and humid summers and short, mild winters. In summer months, the average daily temperature is 82^0 Fahrenheit. In winter months, the average daily temperature is 41^0 Fahrenheit. Heavy snowfall occurs occasionally, but only remains on the ground for a few days (Reference 1, pp. 3). A climatic summary from the United States Weather Bureau station at North Little Rock, Arkansas is attached as Reference 5.

Precipitation is fairly well distributed throughout the year and is generally adequate for most crops. The 1990 annual precipitation for North Little Rock, Arkansas, was 64.26 inches, with a deviation of 17.99 inches from the normal. Spring time is the wettest season, and May is normally the wettest month. Winter and spring rains are associated with frontal systems and are of a general, or widespread, character. Summer and fall rains are mainly thundershowers from convective clouds. The evaporation rate in summer may be as high as one-third (1/3) inch per day (Reference 1, pp. 3; Reference 5, pp. 4, 5; Figure 4).

2.2 Site Description

The ICI site, within Pulaski County, is located in Range 12 West Township 2 North Section 35 (Reference 3). The legal description of the property on which the ICI site is located is attached as Reference 6.

The property is relatively flat with approximately a 1/2 percent slope to the northeast. The property is rectangular in shape and bordered on the south by commercial, industrial and transportation (railroad), on the west by commercial and residential, on the north by residential, commercial, and industrial, and on the east by industrial and open urban area. The facility covers approximately 7 acres. The entire perimeter of the site is fenced (chain-link) with entrances off of 12th Street that are locked after hours. The facility operates on one shift five days a week (Reference 7, pp. 1; Figure 5).

Current structures onsite include four (4) granular silo tanks, a granular holding tank, two (2) charcoal filter tanks, two (2) dust collector tanks, three (3) granular product storage buildings, an office complex containing the site laboratory, a worker's breakroom and shower building, a maintenance shop, two (2) packaging buildings, six (6) process tanks, a boiler building, a covered loading dock, a liquid tank farm, and two (2) underground tanks utilized for solvent storage (Reference 7, pp. 4, 5; Figure 5).

In addition to the above mentioned structures there is a 80' by 160' burial area, located underneath the northeast corner of one of the three granular storage buildings, of "sevin dust". This area is discussed in further detail in Section 2.3 of this report (Reference 7, pp. 4,5; Reference 8; Figure 5).

ICI had an incinerator onsite that was used to incinerate empty bags, paper refuse, and wooden pallets. This unit was disassembled about two (2) months ago because it had not been utilized for many years (Reference 7, pp. 4).

The ICI facility has two (2) active permits, a State Air Permit (# 1030-AR-1) and a National Pollutant Discharge Elimination System (NPDES) Permit (# AR0042901). The specifics of these permits are discussed in further detail within the appropriate sections of this report (Reference 9; Reference 10).

2.3 Operational History and Waste Characteristics

ICI is a Delaware corporation located in the City of North Little Rock, Pulaski County, Arkansas. Prior to 1987, the facility operated under the name of Stauffer Chemical Company. On November 23, 1987, Arkansas Department of Pollution Control and Ecology received written correspondence from Stauffer Chemical Company stating as of January 1, 1988, the plant would resume operation under the management of ICI of Americas, Inc. ICI mixes and formulates liquid and granular herbicides for agricultural usage. As a result of manufacturing agricultural chemicals, ICI generates a considerable amount of hazardous wastes. In 1991, ICI reported a generation rate of 1,590 pounds of hazardous waste. Waste streams generated in 1991 included ignitable characteristic wastes (D001) and spent laboratory solvents (F003 and F005). All

hazardous waste generated in 1991 by ICI was transported via a permitted hazardous waste transporter to an approved treatment, storage, and disposal (TSD) facility. In addition to the hazardous waste generated, ICI generates on an average of 292,640 pounds of non-hazardous waste per year consisting of laboratory glassware, quality control samples, non-regulated liquids and filter cakes, granular production refuse, and floor sweepings. All non-hazardous waste is managed accordingly and shipped offsite to an approved facility to handle such waste. A listing of chemicals used by ICI to manufacture agricultural chemicals is attached as Reference 11 (Reference 7, pp. 2; Reference 12).

On February 1, 1980, Environmental Protection Agency contractors conducted a Site Investigation (SI) at ICI. The SI addressed the burial site and mentioned the area had a concrete cover and therefore presented no threat. As a result of a complaint received at the Arkansas Department of Pollution Control and Ecology (November 5, 1991), this site has been reopened to further investigate the potential threats posed by the burial site (Reference 13; Reference 14).

On December 17, 1990, Water Inspectors from the Arkansas Department of Pollution Control and Ecology conducted an inspection at ICI pursuant to the federal and state water pollution regulations. The inspection revealed the facility several violations pertaining to the site's NPDES permit. Originally ICI had three (3) discharge

areas designated within their NPDES permit. In order to simplify matters, ICI arranged through Arkansas Department of Pollution Control and Ecology in April, 1992, to route all three of the effluents to one location. Currently, this fourth discharge area is referred to as outfall 004. All effluent leaving the site exits through outfall 004 via underground piping. Site effluent consists of stormwater runoff from various locations onsite. No process water is released from the plant. The facility is required to monitor the flow, chemical oxygen demand (COD), total suspended solids (TSS), oil and grease content, total phenols, total arsenic, total zinc, and acute biomonitoring. In addition, the effluent discharge pH shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored once per day per discharge (Reference 10; Reference 15; Figure 6).

On April 16, 1991, Arkansas Department of Pollution Control and Ecology issued a Consent Administrative Order (LIS 91-074) pursuant to the authority of the Arkansas Water and Air Pollution Act to ICI. The Order was initiated as a result of ICI failing to meet the limitations set forth within their NPDES permit (Reference 16).

On July 2, 1991, Counsel for the Arkansas Wildlife Federation notified ICI of Arkansas Wildlife Federation's intent to file a citizen suit in a federal district court against the facility. The Arkansas Wildlife Federation believed ICI, which discharges to an unnamed tributary of the West Branch of Dark Hollow Canal, a

tributary of the Arkansas River, violated effluent standards by failing to comply with NPDES permit ARD0042901 on a number of instances. On August 5, 1991, ICI responded to the Counsel for the Arkansas Wildlife Federation regarding NPDES permit compliance at ICI's plant in North Little Rock, Arkansas. ICI informed the Counsel of a multi-step action plan that they developed and have implemented to address the compliance issues. In addition, ICI notified the Counsel of the Consent Administrative Order they had entered into with Arkansas Department of Pollution Control and Ecology. In summary, ICI requested the Counsel for Arkansas Wildlife Federation recognize the facility's progress and positive intentions and select a course of action consistent with a mutual goal of environmental compliance (Reference 17, pp. 1; Reference 18; Reference 19).

On September 6, 1991, an Air Inspector from Arkansas Department of Pollution Control and Ecology performed a routine inspection of the ICI site pursuant to the Arkansas Air Pollution Control regulations. The inspection revealed the facility was in compliance with their permit at the time of the inspection. ICI's current air permit addresses eight (8) emission sources. These sources are as follows:

Source 01	Granular herbicide production
Source 02	Liquid herbicide production
Source 03	Vapam production
Source 04	Bulk loading/unloading and storage areas

Source 05	Herbicide technical grade storage area
Source 06	Kerosene storage area
Source 07	Tenneco storage area
Source 08	Emulsifier

The pollutants being monitored are volatile organics. Only source 01 has a control feature, which is baghouse filters and adsorbers. ICI's air permit outlines allowable emission rates specific for each source (Reference 9; Reference 20).

A series of non-compliance notification reports, for failure to meet NPDES permit specifications, have been submitted from ICI to Arkansas Department of Pollution Control and Ecology. The notification reports range in date from January, 1991 to February, 1992. Effluent characteristics which exceeded permit requirements varied from zinc, COD, TSS, oil and grease, and total phenols (Reference 21).

On December 11, 1992, an onsite reconnaissance was conducted by an Arkansas Department of Pollution Control and Ecology representative. Facility information was obtained regarding site operations, site structures, permits, and the history of the burial site. The inspection included review of available file information, discussion of targets, and a site inspection (Reference 7, pp. 1 through 7; Reference 8).

3. GROUND WATER PATHWAY

3.1 Hydrogeologic Setting

The ICI site, Pulaski County, North Little Rock, Arkansas, is in the north central part of the West Gulf Coastal Plain Physiographic Province (Figure 3). The Gulf Coastal Plain of Arkansas, which occupies about 27,370 square miles, or about 52 percent of the total area of the State, ranges in elevation from 100 to 700 feet above sea level. It is a southward sloping plain whose western part is a rolling, slightly hilly country, most of whose surface stands at elevations of approximately 200 to 400 feet above sea level. Most of the rocks of the Coastal Plain are of sedimentary origin composed of clay, sandstone, marl, chalk, conglomerate, and lignite, and range in age from early Cretaceous to Quaternary. Most of the rocks of the Coastal Plain are poorly cemented, and none of the beds have been greatly deformed (Reference 22, pp. 7, 8).

There are nine geologic units exposed in the Coastal Plain portion of Pulaski County. However, only three units (Unit 3, 7, and 9) are of major importance as sources of water. The three units of importance within Pulaski County consists of the Tertiary and Quaternary Age. The remaining units do not yield adequate water (Reference 23, pp. 4, 11).

Unit 3, one of the three major aquifers, consists mainly of intergrading and interfingering beds of claystone, calcareous sandstone, sandy limestone, marl, and conglomerate and includes minor beds of arkose, kaolin, and lignite. This units measured thickness ranges from 7 1/2 to nearly 60 feet. At depth the unit is thin or locally absent along the flanks of buried hills of igneous rock. The unit thickens rapidly eastward and attains a maximum thickness of 185 feet (Reference 23, pp. 4, 12; Figure 7).

Unit 7, the second of the three major aquifers, consists of a homogeneous tan or gray fine to medium, loosely packed sand, containing some interbedded gray clay lenses. A lignite bed is present locally at the base. The thickness of this unit ranges from 207 to 412 feet and averages 320 feet (Reference 23, pp. 4, 12, 13; Figure 7).

Unit 9, the third of the three major aquifers, consists of terrace deposits and alluvium. The terrace deposits consist of maximum thickness of about 60 feet of dark-brick to salmon-red clay, containing a variable amount of fine silt that grades locally to sand. The sand is common toward the top of the unit. The alluvium consists of a relatively thick sequence of fluvial deposits which cover the eastern part of Pulaski County. The alluvium was deposited by the Arkansas and Mississippi Rivers, and it blankets much of the eastern half of Arkansas and adjacent States. It also includes the flood-plain deposits of the Saline River, Fourche

Creek, and the Arkansas River northwest of Little Rock. The predominant characteristic of the alluvium is the change from gravel or coarse sand at the base, to fine material at the top. The alluvium attains a maximum thickness of 120 feet in eastern Pulaski County but is much thinner along the Saline River, Fourche Creek, and the Arkansas River northwest of Little Rock (Reference 23, pp. 13; Figure 7).

Table 1 reflects the usage of ground water in Pulaski County, Arkansas (Reference 24, pp. 10).

TABLE 1

GROUND WATER USE IN PULASKI COUNTY, ARKANSAS *
(in million gallons per day)

Public Supply	Self-Supplied industry	Rural Use	Irrigation	Fish and Minnow Farms	Electric Energy	County Total
3.38	0.71	6.91	23.30	1.25	1.03	36.58

* Reference 24 - Use of Water in Arkansas, pp. 10.

The City of North Little Rock obtains drinking water from surface water intakes. There are no municipal waterwork facilities or private residents located within 4 miles of the site that relies on ground water for drinking water supplies (Reference 25; Reference 26).

3.2 Ground Water Targets

There are approximately 1936 homes within a 4-mile radius of the ICI site. Approximately 75 percent of the population within this 4-mile radius obtains their drinking water supply from North Little Rock Waterworks in North Little Rock, Arkansas. North Little Rock Waterworks serves a total population of 116,610. The remaining 25 percent obtain their drinking water from Little Rock Municipal Waterworks. Little Rock Municipal Waterworks serves a total population of 345,485. Drinking water from both municipalities is obtained from surface water intakes, Lake Maumelle and Lake Winona. There are no individual private wells located within a 4 mile radius of the site. There are no municipal ground water wells, utilized for drinking water, within 4 miles of the site. The number of homes and population within a 4-mile radius of ICI site in North Little Rock, Arkansas are summarized in Table 2 (Reference 25; Reference 27;. Reference 28; Figure 8).

TABLE 2

TOTAL POPULATION WITHIN A 4-MILE RADIUS

Distance Ring	No. of Homes*		Persons/Home**		Population
0-1/4 mile	25	X	2.42	=	60.50
1/4-1/2 mile	40	X	2.42	=	96.80
1/2-1 mile	390	X	2.42	=	943.80
1-2 mile	489	X	2.42	=	1183.38
2-3 mile	463	X	2.42	=	1120.46
3-4 mile	529	X	2.42	=	1280.18
TOTAL	1936 (#)	X	2.42	=	4685.12

*Pulaski County Map, Arkansas, Arkansas Highway Department Planning Division, 1987 (Figure 8).

**Arkansas Data Center, Little Rock, Arkansas, 1990 Census (Reference 28).

(#) 0 Homes have private wells.

3.3 Ground Water Conclusions

A release of hazardous substances from ICI to the ground water is probable. Due to the high conductivity of the chemicals onsite, the potential for widespread migration of the contaminants is high. However, ground water is not used for drinking water within 4 miles of the site. Precipitation in the general area is moderate and evenly distributed throughout the year, soil permeability is very slow, runoff is very slow, and the available water capacity is high. The depth to the shallowest aquifer is approximately 7 1/2 feet deep (Reference 1, pp. 2, 8, 21; Reference 23, pp. 12).

4. SURFACE WATER PATHWAY

4.1 Hydrologic Setting

Pulaski County lies within the Arkansas River Basin of the Gulf Coastal Ecoregion. The Gulf Coastal Ecoregion is located east of the Arkansas River and south of the Ouachita Mountains Ecoregion of Arkansas. Major streams in the Gulf Coastal Ecoregion originate in the Ouachita Mountains Ecoregion. Some areas have perennially flowing streams of various watershed sizes while in other areas, streams with the largest watershed sizes have only intermittent flow during the summer and early fall (Reference 29, pp. 6, 9; Figure 9).

The total population within a 4-mile radius of ICI depends exclusively upon surface water to meet their drinking water needs. Table 3 reflects the usage of surface water in Pulaski County, Arkansas (Reference 24, pp. 10, Reference 25).

TABLE 3

SURFACE WATER USE IN PULASKI COUNTY, ARKANSAS *
(in million gallons per day)

Public Supply	Self-Supplied Industry	Rural Use (Livestock)	Irrigation	Fish and Minnow Farms	County Total
52.30	1.44	6.07	13.85	1.59	75.25

* Reference 24 - Use of Water in Arkansas, pp. 10.

Overland drainage from the ICI site and the facility's authorized discharge points in accordance with their NPDES permit flows northeast into a drainage ditch that flows into an unnamed tributary of the West Branch of Dark Hollow Canal; thence to West Branch of Dark Hollow Canal; thence to Dark Hollow Canal; thence into the Arkansas River in Segment 3C of the Arkansas River Basin. The Arkansas River flows south through Pulaski County; thence Jefferson County; thence Lincoln County; thence Desha County; thence into the Mississippi River in Bolivar County, Mississippi (Reference 10; Reference 30; Figure 6; Figure 8).

There is no flow data available for the drainage ditch that directly receives site stormwater runoff. The ditch travels approximately east and enters the unnamed tributary of the West Branch of Dark Hollow Canal. The unnamed tributary flows into West Branch of Dark Hollow Canal. The West Branch of Dark Hollow Canal travels for approximately 1/2 miles, enters Dark Hollow Canal, which flows for approximately 1 1/2 miles and merges into the Arkansas River. There is no flow data available for the unnamed tributary, the West Branch of Dark Hollow Canal, or Dark Hollow Canal. The Arkansas River, whose watershed size is 158,288 square miles, has an average flow rate of 42,320 cubic feet per second (cfs). This information is recorded at David D. Terry Lock and Dam below Little Rock about 10.7 miles downstream from Main Street bridge at Little Rock. The Arkansas River flows through four Arkansas counties and enters the Mississippi River.

The Mississippi River, whose watershed size averages 932,800 square miles, has an average flow rate of 484,500 cfs (Reference 30; Figure 10).

There are no surface water intakes utilized for drinking water within 15-miles downstream of the site (Reference 30).

The ICI site lies within a special flood hazard area inundated by the 100-year flood. The specific zone in which the ICI site is located is classified as Zone AH. Zone AH indicates areas where the flood depths are of 1 to 3 feet. These areas are usually areas of ponding during heavy periods of rainfall (Figure 11).

4.2 Surface Water Targets

A total of 102,000 residents within North Little Rock city limits are served drinking water from North Little Rock Waterworks. North Little Rock Waterworks purchases surface water from Little Rock Waterworks, which obtains drinking water from two surface water intakes: Lake Maumelle and Lake Winona. Both surface water intakes are located west of the site (Figure 10). North Little Rock Waterworks also supplies drinking water to a consecutive population of 14,610. A total population of 116,610, within a 4-mile radius of the ICI site, are served drinking water obtained from North Little Rock Waterworks (Reference 25; Reference 27). Remaining residents who are not served drinking

water from municipal supplies obtain drinking water from individual private drinking water wells. However, there are no individual private wells located within 4 miles of the ICI site (Reference 26). The number of homes and population within a 4-mile radius of the site are summarized in Table 2 of this report.

The Arkansas Natural Heritage Commission maintains a database on the status and location of rare species and significant ecological communities in Arkansas. Within a 15-mile radius of the ICI site in North Little Rock, Arkansas, there are a total of 62 occurrences of elements of special concern. An occurrence represents a location which provides habitat for sensitive species (both state and federal species), is an outstanding example of a natural community, or is a colonial bird nesting site. The Bald Eagle, Interior Least Tern, Ozark Chinquapin, which are Federal Listed and/or Endangered species, and the Small-headed Pipewort, Winterberry Holly, and Purple Fringeless Orchid, which are State Endangered or Threatened plants are known to occur within a 15-mile radius of ICI. Natural Communities occurring within a 15-mile radius of the site are Cattail Marsh, Nepheline Syenite Glade, and the Willow Oak Forest. Federal and State managed areas that fall within a 15-mile radius of the site are listed below (Reference 31; Figure 10):

Federally Managed Areas

Camp Joseph T. Robinson National Guard Training Area (Department of Defense)

State Managed Areas

Bell Slough Wildlife Management Area (AR Game & Fish)
Camp Robinson Wildlife Management Area (AR Game & Fish and Dept. of Defense)
Holland Bottoms Wildlife Management Area (AR Game & Fish)
Holland Bottoms Willow Oak Forest Preserve (AR Natural Heritage Commission and AR Game & Fish)
Pinnacle Mountain State Park (AR Parks & Tourism)

Designated uses have been established for surface water areas present within a 15-mile radius of North Little Rock, Arkansas. Designated uses include primary and secondary contact recreation, perennial fisheries, and agricultural, and irrigation supplies. In addition to these uses, the Ouachita River has been designated as an Ecologically Sensitive Waterbody due to the presence of Flat floaters, Ouachita rock pocketbook mussels, and Pink mucket mussels. The Ecologically Sensitive waterbody identifies segments known to provide habitat for threatened, endangered, or endemic species of aquatic or semi-aquatic life forms. The Saline River, located within the same section of the Gulf Coastal Ecoregion as the ICI site, has been designated as an extraordinary resource of waterbody (Reference 32, pp. 55 through 61).

There are two substantially different types of streams within the Gulf Coastal Ecoregion, springwater influenced streams (SWI) and typical (T) Gulf Coastal streams. The springwater influenced streams have a significantly different fishery from the typical Gulf Coastal streams. These differences are primarily a result of the critical season flow differences. The springwater influenced streams are further differentiated by their greater abundance of sensitive species. Dominant key species of the Gulf Coastal Ecoregion fish population includes redfin shiner (T and SWI), spotted sucker (T), blacktail redhorse (SWI), yellow bullhead (T), flier (T), freckled madtom (SWI), longear (SWI), slough darter (T), grass pickerel (T and SWI), and creole darter (SWI). Key indicator species of the Gulf Coastal Ecoregion includes pirate perch (T and SWI), warmouth (T), golden redhorse (SWI), spotted sunfish (T), spotted bass (SWI), dusky darter (T), scaly sand darter (SWI), creek chubsucker (T), striped shiner (SWI), and banded pygmy sunfish (T and SWI) (Reference 29, pp. 106, 107, 110; Figure 9).

Within a 15-mile radius of the ICI site, located in North Little Rock, Pulaski County, Arkansas, the predominant forest types are loblolly pine, shortleaf pine, and upland and bottomland hardwood. The central portion of Pulaski County consist of prairie areas (Figure 12).

4.3 Surface Water Conclusions

A release of hazardous substances to surface water pathway is suspected. The facility has had several instances in which they have been in non-compliance with the facility's NPDES permit. ICI's NPDES permit discharge consists only of stormwater drainage, not process water. The shortest overland distance to surface water from the ICI site is into the drainage ditch located northeast of the site. Overland drainage from the site travels for about 1 1/4 miles and enters the Arkansas River (Figure 8). Fisheries located along the surface water migration pathway are Arkansas River and Mississippi River. Site drainage is predominately to the northeast (Reference 7; Reference 15; Reference 21; Reference 29, pp. 106, 107, 110; Reference 30; Reference 32, pp. 55 through 61).

There are no drinking water surface intakes within 15 miles downstream of the site. North Little Rock Waterworks, serving a total population of 116,610, purchases drinking water from Little Rock Waterworks. Little Rock Waterworks obtains drinking water from two surface intakes, Lake Maumelle and Lake Winona, both which are located 20 miles or greater west of the site. Natural Communities occurring within a 15-mile radius of the site are Cattail Marsh, Nepheline Syenite Glade, and the Willow Oak Forest (Reference 30; Reference 31; Figure 10).

5. SOIL EXPOSURE AND AIR PATHWAYS

5.1 Physical Conditions

The predominant soil found in North Little Rock, Arkansas and surrounding areas is classified as part of the Perry Norwood Association. Soil types within this association are classified as poorly drained and well drained, level, deep, clayey, and loamy soils on bottom lands (Figure 13). The soil appearing on and around the ICI site is classified as Perry-Urban land complex (Pu) (Figure 14). Perry-Urban land complex soils consists of Perry soils, and of areas of material, mainly from Perry soils, that has been modified by urban development. Slopes are less than 1 percent. Included with this complex in mapping are spots of Latanier and Moreland soils, areas of clayey Umbraqualfs, and spots subject to frequent flooding (Reference 1, pp. 21).

The Perry series consists of poorly drained, level soils on bottom lands. These soils formed in thick beds of clayey slack-water deposits laid down by the Arkansas River. The native vegetation is mixed hardwoods. In a representative profile, the surface layer is dark yellowish-brown clay about 3 inches thick. The subsoil extends to a depth of 72 inches or more. Its upper 27 inches is mottled, dark-gray and gray clay, and the lower part is dark reddish-brown clay that is mottled below a depth of 61 inches (Reference 1, pp. 20).

Runoff is very slow on the Perry soil. Permeability is very slow, and available water capacity is high. Because of wetness and poor aeration, the soils in the Perry-Urban land complex are suited to only a limited number of water-tolerant landscaping plants. Because of wetness, low bearing capacity, and high shrink-swell potential, these soils are severely limited for most urban uses. Perry soils are moderate to high in natural fertility (Reference 1, pp. 20, 21).

5.2 Soil and Air Targets

ICI employs 31 people. There are no residents onsite. The nearest residence is approximately 1/4 block north of the site (Reference 7, pp. 1; Reference 8). There are approximately 25 homes within 0.25 miles of the site. The site is accessible to the public off of Twelfth Street. Public access is limited. The site is fenced around the entire perimeters (Reference 7, pp. 3; Figure 5; Figure 8). Located within a 15-mile radius of the site, there are several sensitive environments including Cattail Marsh, Nepheline Syenite Glade, and Willow Oak Forest. Federally and State managed areas exist within 15 miles of the site. In addition, Federal and State endangered species reside within the 15-mile radius of the site. There are no occurrences of wetlands within a 15-mile radius of the site (Reference 31).

5.3 Soil Exposure and Air Pathway Conclusions

The soil exposure pathway appears to pose a threat at the ICI site due to the burial site consisting of approximately 40,000 pounds of "sevin dust". The burial pit is unlined and capped with donofil. Currently, there is a granular storage building, with a concrete foundation, on top of the burial site (Reference 8). The burial site covers an area of approximately 80' by 160'. The grounds around the perimeter of the building showed no signs of stress. The majority of the site is either concrete or has adequate vegetative cover. No out of the ordinary odors or excessive dust were observed during the onsite reconnaissance (Reference 7, pp. 1 through 7).

The air pathway does not appear to pose a threat at the ICI site. The latest air inspection report did not reveal any non-compliance problems pertaining to the facility's permit (Reference 9; Reference 20).

6.0 SUMMARY AND CONCLUSIONS

ICI is an agricultural products formulator. They specialize in the formulation of herbicides. The facility generates hazardous wastes from the operational processes associated with the manufacturing of agricultural chemicals.

A release of hazardous substances into the ground water is probable. The depth to the shallowest aquifer is approximately 7 1/2 feet deep. Due to the high conductivity of the chemicals onsite, the potential for widespread migration of the contaminants is high. Precipitation in the general area is moderate, the soil permeability is very slow, and the available water capacity is high. There are no private wells located within a 4-mile radius of the site that utilizes groundwater for drinking water purposes.

A release of hazardous substances to the surface water migration pathway is suspected. ICI has had several instances of non-compliance with their NPDES permit for stormwater runoff. The entire population located within a 4-mile radius of the site relies solely upon surface water for drinking water. There are no private residential wells within a 4-mile radius of the site. The population within this 4-mile radius is served drinking water from North Little Rock Municipal Waterworks, who serves a total population of 116,610. North Little Rock Municipal Waterworks purchases surface water which comes from Lake Winona. Lake Winona is located greater than 20 miles west of the site. There are fisheries located along the surface water migration pathway leaving the site. The shortest overland distance to surface water from the ICI site is into a drainage ditch located on the northeast boundary of the property. There are no drinking water intakes within 15 downstream miles of the site. There are three

(3) natural communities and several federal and state elements of concern located within a 15-mile radius of the site. There are no wetlands within a 15-mile radius of the site.

A release of hazardous substances to the soil is suspected to have occurred because of the 40,000 pounds of "sevin dust" buried within an unlined pit onsite. The air pathway does not appear to pose a threat at this time. ICI employs 31 people. The nearest resident is located approximately 1/4 block north of the site. There are approximately 25 homes within a 0.25 mile of the site. Public access is limited. The site is fenced around the entire perimeters.

Surface water samples and air monitoring have been conducted at the site as a requirement of facility permits. Ground water or soil samples could not be located during subsequent file review. Due to the presence of a shallow aquifer and the nature of the soil onsite, further investigative sampling is warranted on this site to determine the extent of contamination, if any, in all the medias.

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FIGURES

REFERENCE 2

ICI BURIAL PIT
LATITUDE 34:45:47 LONGITUDE 92:15:15 1980 POPULATION

KM	0.00-.400	.400-.800	.800-1.61	1.61-3.23	3.23-4.84	4.84-6.45	SECTOR TOTALS
S 1	0	0	0	2185	4902	2659	9746
S 2	0	0	0	2215	2598	4111	8924
S 3	0	0	0	86	0	954	1040
S 4	0	0	1119	0	1286	1775	4180
S 5	0	0	0	914	1436	779	3129
S 6	0	0	1019	668	1905	1490	5082
S 7	0	0	750	825	1931	738	4244
S 8	0	0	0	1417	0	742	2159
S 9	0	0	616	1027	489	1801	3933
S10	0	0	235	1786	6764	4268	13053
S11	0	0	88	124	5269	5963	11444
S12	0	463	0	428	2050	7074	10015
S13	0	0	826	1791	2713	4479	9809
S14	0	0	0	3641	1050	718	5409
S15	0	417	485	1174	5565	2	7643
S16	0	353	0	2119	3725	7605	13802
RING TOTALS	0	1233	5138	20400	41683	45158	113612

08/01/94